

## REMARKS

The drawings were objected to because Figure 8 failed “to show the yellow line, which is the weighted average of the ratios in history . . .” The formal drawings are in black and white. The specification has been corrected on page 7 to reference the –graph line– rather than a “yellow line”. As corrected, it is respectfully requested that the objection to the drawings be withdrawn and the drawings accepted by the Examiner.

The specification was objected to because of minor grammatical errors which appeared on page 4 of the specification. The errors pointed out by the Examiner have been corrected by this amendment and withdrawal of the objection is therefore respectfully requested.

Claims 8 and 9 are now pending in the application. Original claims 1 to 7 have been canceled in order to expedite the prosecution of this application. New claim 8 is based on original claims 1 to 5, and new claim 9 is based on original claims 6 and 7. In drafting these claims, the Examiner’s objections and rejections to the original claims have been taken into consideration, and it is believed that these claims now clearly represent the patentable subject matter of the disclosed invention.

The disclosed and claimed invention is a computer implemented system that makes use of four sources of information, creating seven different forecasting models. The adaptive optimization finally makes use of these seven models to produce a final forecast. The invention significantly reduces the forecast error for any given individual indicator or forecasting subsystem.

The four sources of information or indicators are the following:

1. Load or total order ( $L$ );
2. Ship ( $S$ );
3. CA Quarterly history ( $CA_{hist}$ ); and
4. CRAD (customer requested date) or RSD (requested ship date for the load or orders).

In the forecasting framework according to the invention, a plurality of forecasting

subsystems are incorporated, but only one among the plurality makes use of the information in the past only. In a specific implementation of the invention, seven forecasting subsystems are incorporated. All these seven forecasting methods share the same central fundamental theoretical foundations while each maintains its own uniqueness. A unique capability of the invention is the optimization framework making use of all the seven indicators. This novel and unique capability significantly reduces the forecast error for any given individual indicator or forecasting subsystem.

As described on page 5, lines 2–6, “By modeling the ratio of quarter-to-date load to quarter CA actual as a random variable with gamma distribution, the CA becomes a variable with generalized gamma distribution whose mean and sigma can be easily computed from the sample mean and sigma of the Load-to-CA ratio.” Further, as described on page 5, lines 9–18, “Because the Load to CA ratio exhibits significant uncertain and large sigma for its distribution from time to time, the estimator for  $CA_{LS}$  211 makes use of a unique property not previously known anywhere that the ratio of Load-to-CA relates very well to the Ship-to-Load ratio. By estimating the functional relationship and the parameters relating these two ratios, BIA can predict the load-to-CA ratio with much less volatility or sigma, making use of the current Ship-to-Load ratio and the functional relationship relating the two ratios. Once the load-to-CA ratios are estimated with higher certainty, the final CA forecast can be produced with higher certainty also.” The use of a ratio to predict another ratio is a key point of the disclosed and claimed invention.

Claim 1 was rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 7,236,940 to Chappel in view of U.S. Patent Application Publication 2004/0254825 of Hsu et al. Claims 2 to 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over the patent to Chappel and the patent application publication of Hsu et al., further in view of U.S. Patent Application Publication 2002/0133444 of Sankaran et al. and U.S. Patent Application Publication 2002/0161674 of Scheer. In making this latter rejection, the Examiner also relied on U.S. Patent Application Publication 2007/0162365 of Weinreb, but this is not a valid reference.

Chappel discloses a system and method for assessing business activities which

includes retrieving historical data associated with a business activity. At least one statistical model is generated based on the historical data. Knowledge is developed based on the statistical model(s). The knowledge is applied to at least one predetermined rule. Validity of the statistical model(s) is assessed based on the application of the knowledge using the predetermined rule(s). A valid statistical model is recommended to a user.

Hsu et al. disclose an automated supply management system for dynamically fulfilling a customer requested order having an order fulfillment system for fulfilling a plurality of customer requests in accordance with a plurality of processing capacity restraints defined for a plurality of pieces of manufacturing equipment disposed within a manufacturing facility. The Hsu et al. system includes an allocation planning system for receiving a plurality of capacity modeling data from the order fulfillment system and an order management system for communicating a plurality of consumption data and a customer requested due date to the order fulfillment system. The order management system requests the customer requested due date and receives a calendar date of production available to promise from the order fulfillment system.

It is noted here that the key point of the claimed invention is not picking the best forecasting method out of a collection but, rather, the particular set of collections of methods claimed. How the claimed invention uses Load, Ship and CRAD to forecast demand is not at all obvious. The most important point is to use the procedure of predicting the ratio of current order to quarterly total order (the latter is the quantity to be predicted at the end) with the ratio of load to ship.

The Examiner stated that "Hsu teaches refining the forecast based on distribution demand." The mention by Hsu et al. of distribution demand does not mean there is anything in common in a meaningful way with the claimed invention. In the claimed invention, distribution is used in the context of using one particular ratio to predict another particular ratio and uses the spread of CRAD as well as its mean to sigma to predict the adjustment needed in the prediction result of the ratio-to-ration prediction. This totally unrelated to the method according to Hsu et al.

The Examiner alleged that ". . . book-to-bill ratio is the load to ship ratio, as

evidenced by Weinreb". But Weinreb never uses this ratio to predict order to quarterly actual ratio (one ratio predicting another ratio), which is a key point in the claimed invention. Again, Weinreb is not a valid reference against this application.

The Sankaran et al. publication discloses a method and apparatus for financial planning and control that allow an organization to rapidly realign financial resources throughout the organization in response to changing market and business conditions. The method links critical external information directly to company decision-making activities to allow a business to better align resources to capitalize upon opportunities or minimize the impact of adverse business conditions. The disclosed embodiment comprises several modules, including the TopLine Planner.TM. module, BizPlan.TM. module, and SpendCap Manager.TM. module. The TopLine Planner.TM. module receives inputs from and provides information to sales, marketing and manufacturing, and is coupled to the BizPlan.TM. module. The TopLine Planner.TM. module dynamically revises topline forecast information by capturing current outlook information from front line sources. Revenue information is passed between the TopLine Planner.TM. module and the BizPlan.TM. module. The BizPlan.TM. module rapidly refreshes expense plan information by using business rules and constraints. The BizPlan.TM. module is coupled to the SpendCap Manager.TM. module, and expense information is passed between the modules. The SpendCap Manager.TM. module distributes resources to all business managers and receives requests for increases in the allocation of resources.

It is noted here that just because Sankaran et al. uses CA, Load or Ship, does not mean that they use them the way they are used in the claimed invention. Again, one of the key concepts of the claimed invention is using one ratio to predict another ratio.

The Scheer publication discloses a method for fulfilling an order in a supply chain which is performed by extracting from a customer system information pertaining to the work order that specifies a piece of equipment to be repaired and items expected to be used during the repair procedure, determining, using an equipment knowledge base, a probability that each of the items will be needed to

effect the repair procedure, and using the determined probability to stage the items within the supply chain whereby the items are made ready for use in the repair procedure, the equipment knowledge base for use in future probability of need calculations.

Again, CA is not the point of the claimed invention. Rather, it is using CA in the context of using one ratio to predict another ratio and the way CRAD, mean and sigma are used.

Claims 6 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over the patent to Chappel in view of the patent application publications of Sankaran et al., Sheer, and Hsu et al., further in view of U.S. Patent Application Publication 2005/0060164 of Eli Berl Illion. In making this rejection the Examiner takes Official notice that using a log mean to sigma ratio was a matter of common knowledge to one skilled in the art at the time of applicant's invention, as evidenced by U.S. Patent Application Publication 2006/0246436 of Ohno et al.

Eli Berl Illion discloses a delivery system and method for delivering one of a plurality of identical products from a seller to a purchaser. The identical products are transported in a delivery circuit around a plurality of delivery nodes. It is then determined if one of the identical products has been ordered by one of the purchasers. If so, then it is determined which of the plurality of delivery nodes is closest to the purchaser. Then, the closest one of the identical products is provided to that delivery node along the delivery circuit and then the product is transported from the delivery node to the purchaser. The method also includes the association of each of the identical products with a unique tracking number. Also, the destination address of said purchaser is determined and the unique tracking number and destination address is "pushed" to the delivery closest to the purchaser node prior to the physical arrival of the products at the delivery node.

Ohno et al. disclose a method of judging whether a patient is sensitive to imatinib or not, in case where the patient is suffering from a disease such as CML to be treated by administration of imatinib, that is, a method for judging whether the administration of imatinib is effective for the therapy of the disease or not, is

disclosed. Amounts of a plurality of genes selected from the group consisting of the specific 77 genes in sample cells separated from body are measured; and the measured amounts are compared with those of responders and non-responders to imatinib or a derivative thereof or a pharmaceutically acceptable salt thereof.

In the claimed invention, CRAD is used to refine the ratio-to-ratio prediction. Applicant only used the spread of CRAD across all orders, and sees the ratio of mean to sigma, in comparison with the norm. No prior art uses CRAD in this way, and it is not obvious to use mean to sigma ratio on CRAD as claimed.

New claim 8 recites, *inter alia*, “generating a forecast ( $CA_L$ ) from Load ( $L$ ) by modeling the *ratio* of quarter-to-date load to quarter CA actual as a random variable with gamma distribution so that the CA becomes a variable with generalized gamma distribution and computing the sample mean and sigma of the Load-to-CA *ratio* for a final forecasted  $CA_L$  demand; generating a forecast ( $CA_S$ ) from Ship ( $S$ ) by modeling the *ratio* of quarter-to-date ship to quarter CA actual as a random variable with gamma distribution so that the CA becomes a variable with generalized gamma distribution and computing the sample mean and sigma of the Ship-to-CA *ratio* for a final forecasted  $CA_S$  demand; generating a forecast ( $CA_{LS}$ ) from Load and Ship ( $LS$ ) by forecasting Customer Acceptances (CA) based on Load ( $L$ ), Ship ( $S$ ) and Customer Acceptances history ( $CA_{his}$ ) to generate  $CA_{LS}$  by estimating the functional relationship and the parameters relating the two *ratios* Load-to-CA and Ship-to-CA . . .”  
(emphasis added).

New claim 9 recites, *inter alia*, “forecasting Customer Acceptances (CA) based on Load ( $L$ ) to generate  $CA_L$  by modeling a *ratio* of quarter-to-date load to quarter CA actual as a random variable with gamma distribution so that the CA becomes a variable with generalized gamma distribution whose mean and sigma can be easily computed from the sample mean and sigma of the Load-to-CA *ratio*; forecasting Customer Acceptances (CA) based on Ship ( $S$ ) to generate  $CA_S$  by modeling the *ratio* of quarter-to-date ship to quarter CA actual as a random variable with gamma distribution so that the CA becomes a variable with generalized gamma distribution whose mean and sigma can be easily computed from the sample mean

and sigma of the Ship-to-CA *ratio*; forecasting Customer Acceptances (CA) based on Load (*L*), Ship (*S*) and Customer Acceptances history ( $CA_{his}$ ) to generate  $CA_{LS}$  by estimating the functional relationship and the parameters relating the two *ratios* Load-to-CA and Ship-to-CA; using a log mean to sigma *ratio* of CRAD distribution, adjusting the forecasts  $CA_L$ ,  $CA_S$  and  $CA_{LS}$  to arrive at more accurate forecasts  $CA_{LCRAD}$ ,  $CA_{SCRAD}$ , and  $CA_{LSCRAD} \dots$ " (emphasis added).

It is respectfully submitted that the recited limitations of new claims 8 and 9 pertaining to using one ratio to predict another ratio are not shown or suggested in the prior art and, moreover, such limitations are not obvious in view of the prior art. In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 8 and 9 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to IBM Yorktown Attorney's Deposit Account No. 50-0510.

Respectfully submitted,



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